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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/879,554	06/12/2001	James E. Dibb	1956/135	4580

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EXAMINER

BADERMAN, SCOTT T

ART UNIT	PAPER NUMBER
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2113

DATE MAILED: 02/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/879,554

Applicant(s)

DIBB, JAMES E.

Examiner

Scott T Baderman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 June 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Objections***

1. Claim 19 is objected to because of the following informalities: In line 3 “the replacement disk drive” lacks antecedent basis. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 1-3, 6, 7 and 10-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Kedem (6,154,853).

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The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

As in claim 1, Kedem discloses a method for handling a failed disk drive in a redundancy group of disk drives in an array of disk drives, wherein the failed disk drive is located in a failed disk drive slot that comprises creating a mirrored subsystem within the array including a temporary disk drive (spare) and the failed disk drive slot (Figures 4 and 5, Abstract, column 5: lines 5-59, column 6: lines 35-57).

As in claims 2 and 14, Kedem discloses inserting a replacement disk drive in the failed disk drive slot, copying data from the temporary disk drive (spare) to the replacement disk drive, and replacing the mirrored subsystem with the replacement disk drive after the data on the replacement disk drive matches the data on the temporary disk drive (i.e., once the data from the spare device has been written to the replaced disk (i.e., it matches) and the parity regenerated for all of the logical volumes, the spare device can be returned to an inactive state) (column 6: lines 35-57).

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As in claim 3, Kedem discloses reconstructing each data block of the failed disk drive and writing each reconstructed data block to the mirrored subsystem (Figures 4 and 5, column 5: lines 37-59).

As in claims 6, 7, 10, 11, 12 and 13, Kedem discloses that data on each of the disks in the array are copied to spare devices to create a mirrored subsystem, which is exactly what a RAID 1 (and RAID 1/0) array is (Figures 4, 5 and 6, column 5: lines 5-21).

As in claim 15, Kedem discloses substituting the mirrored subsystem into the redundancy group for the failed disk drive (Abstract, column 2: lines 37-48, column 6: lines 48-52).

As in claim 16, the Applicant is directed to claims 1 and 3 above.

As in claim 17, the Applicant is directed to claims 1 and 2 above.

As in claim 18, Kedem discloses a disk drive array system that comprises a redundancy group comprising at least two disk drives and associated disk drive slots (elements 32, 34, 36 and 38 of Figure 3), a temporary (spare) disk drive with an associated temporary disk drive slot (elements 31, 33 and 35 of Figure 3), logic that detects a failure of one of the disk drives in the redundancy group (column 2: lines 32-35), logic that reconfigures the redundancy group to comprise the disk drives in the redundancy group that have not failed and a second storage array, wherein the second storage array operates as a mirrored subsystem comprising the temporary

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(spare) disk drive and the disk drive slot associated with the failed disk drive (Figures 4-6, column 5: lines 5-59), and logic that reconstructs the data blocks on the failed drive to the mirrored subsystem (Figures 4-6, column 5: lines 37-59).

As in claim 19, Kedem discloses logic that restores the redundancy group to its initial configuration, wherein a replacement disk drive replaces the failed disk drive after the temporary disk drive and a replacement drive inserted in the disk drive slot associated with the failed disk drive contain the same data (column 6: lines 35-57).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 4, 5, 8 and 9 are rejected under 35 U.S.C. 103(a) as being obvious over Kedem.

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter

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disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(1)(1) and § 706.02(1)(2).

As in claims 4, 5, 8 and 9, Kedem discloses the method above, which, according to Figures 4 and 5, appear to be a RAID 4 array system (Figures 4 and 5, column 1: lines 5-11). However, Kedem does not clearly disclose a RAID 3 or RAID 5 array.

It would have been obvious to a person skilled in the art at the time the invention was made to include a RAID 3 or RAID 5 array into the method taught by Kedem above. This would have been obvious because a person skilled in the art would have clearly understood that the method taught by Kedem above uses the RAID array configuration (column 1: lines 5-11), and that by implementing a RAID 3 or RAID 5 array system would not have any affect on the method taught by Kedem above. The very fact that Kedem teaches of a RAID array configuration would have led a person skilled in the art to implement the method above into the different levels of the RAID system. This is because RAID 3, 4, 5 and 6 array systems are very similar in that they rely on parity reconstruction to recover data from a failed disk drive. If a

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method applies to one of these type of RAID systems, like that of Kedem above, then a person skilled in the art would have been led to also use the method in the other remaining RAID array levels. (e.g., RAID 3, 5 and 6).

***Conclusion***


6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

See Form PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott T Baderman whose telephone number is (703) 305-4644. The examiner can normally be reached on Monday-Friday, 6:45 AM-4:15 PM, first Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Beausoliel can be reached on (703) 305-9713. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

  
Scott T Baderman  
Primary Examiner  
Art Unit 2113

STB